WHAT IS CLAIMED IS:

1. A method of transmitting data signals from at least one transmitting terminal with a spatial diversity capability to at least two receiving user terminals, each having a spatial diversity receiving capability, the method comprising:

dividing data signals into a plurality of streams of sub-user data sub-signals;

determining combined data signals in at least one transmitting terminal, said combined data signals being transformed versions of said streams of data sub-signals, wherein on receiving user terminals at least one spatial diversity device receives data sub-signals specific for the corresponding receiving user terminal;

inverse subband processing of said combined data signals;

transmitting with said at least one spatial diversity device said inverse subband processed combined data signals;

receiving data signals on at least one of said receiving terminals by at least one spatial diversity receiving device, said received data signals being at least a function of said inverse subband processing of said combined data signals;

determining on at least one of said receiving terminals estimates of said data sub-signals from said received data signals; and

collecting said estimates of said data sub-signals into estimates of said data signals.

2. The method of Claim 1, wherein said transmission of said inverse subband processed combined data signals is performed in a substantially simultaneous way.

3. The method of Claim 1, wherein the spectra of said inverse subband processed combined data signals are at least partly overlapping.

4. The method of Claim 1, wherein determining combined data signals in said transmitting terminal is carried out on a subband by subband basis.

5. The method of Claim 1, wherein determining said estimates of said data sub-signals in said receiving terminals comprises subband processing.

6. The method of Claim 5, wherein said subband processing comprises orthogonal frequency division demultiplexing.

7. The method of Claim 1, wherein determining combined data signals in said transmitting terminal comprises:

determining intermediate combined data signals by subband processing said data signals; and

determining said combined data signals from said intermediate combined data signals.

8. The method of Claim 7, wherein said subband processing comprises orthogonal frequency division demultiplexing.

9. The method of Claim 1, wherein said inverse subband processing comprises orthogonal frequency division multiplexing.

10. The method of Claim 1, wherein:

said subbands, being involved in inverse subband processing, are grouped into sets, at least one set comprising at least two subbands;

determining combined data signals in said transmitting terminal comprises:

determining relations between said data signals and said combined data signals on a set-by-set basis; and

exploiting said relations between said data signals and said combined data signals for determining said data signals.

11. The method of Claim 1, wherein in said inverse subband processed combined data signals a guard interval is introduced.

12. The method of Claim 1, wherein determining combined data signals further comprises transmitter filtering, and wherein determining estimates of said sub-signals comprises receiver filtering, said transmitter filtering and said receiver filtering being determined on a user-per-user basis.

13. The method of Claim 1, wherein the number of said streams of data sub-signals is variable.

14. The method of Claim 1, wherein the number of said streams is selected in order to minimize the error between said estimates of said data sub-signals and said data sub-signals.

15. The method of Claim 1, wherein the number of said streams is selected in order to minimize the system bit error rate.

16. A method of transmitting data signals from at least two transmitting terminals, each having spatial diversity transmitting capability, to at least one receiving terminal with a spatial diversity receiving capability, the method comprising:

dividing data signals into a plurality of streams of sub-user data sub-signals;

transforming versions of said streams of sub-user data sub-signals into transformed data signals;

transmitting from transmitting terminals said transformed data signals;

receiving on a spatial diversity receiving device received data signals being at least a function of at least two of said transformed data signals;

subband processing of at least two of said received data signals in said receiving terminal;

applying a linear filtering on said subband processed received data signals, said linear filtering and said transforming being selected such that the filtered subband processed received data signals are specific for one of said transmitting terminals;

determining estimates of said data sub-signals from said filtered subband processed received data signals in said receiving terminal; and

collecting said estimates of said data sub-signals into estimates of said data signals.

17. The method of Claim 16, wherein said transmitting data signals is substantially simultaneous.

18. The method of Claim 16, wherein the spectra of said transformed data signals are at least partly overlapping.

19. The method of Claim 16, wherein said transformation of said data sub-signals to transformed data sub-signals comprises inverse subband processing.

20. The method of Claim 16, wherein determining estimates of said data sub-signals from subband processed received data signals in said receiving terminal comprises:

determining intermediate estimates of said data sub-signals from said subband processed received data signals in said receiving terminal; and

obtaining said estimates of said data sub-signals by inverse subband processing said intermediate estimates.

21. An apparatus for transmitting inverse subband processed combined data signals to at least one receiving user terminal with a spatial diversity device, the apparatus comprising:

at least one spatial diversity transmitter;

circuitry configured to divide data signals into streams of data sub-signals;

circuitry configured to combine data signals, wherein at least one of said spatial diversity device of said receiving user terminals receives data sub-signals being specific for the corresponding receiving user terminal;

circuitry configured to inverse subband process combined data signals; and

circuitry configured to transmit inverse subband processed combined data signals with said spatial diversity device.

22. The apparatus of Claim 21, wherein said circuitry configured to combine data signals comprises a plurality of circuits each configured to combine data signals based at least on part of the subbands of said data sub-signals.

23. The apparatus of Claim 21, wherein said spatial diversity transmittercomprises at least two transmitters and said circuitry configured to transmit inverse subband processed combined data signals comprises a plurality of circuits, each being configured to transmit said inverse subband processed combined data signals with one of said transmitters of said spatial diversity device.

24. An apparatus for transmitting data signals to at least one receiving terminal with a spatial diversity device, comprising:

at least one spatial diversity transmitter;

circuitry configured to divide data signals into streams of data sub-signals;

circuitry configured to transform versions of said data sub-signals; and

circuitry configured to transmit with a spatial diversity device said transformed versions of said data sub-signals, wherein at least one of said spatial diversity device of said receiving terminal receives specific received data sub-signals.

25. A method of calibrating a transceiver for wireless communication comprising at least one transmitter/receiver pair connected to an antenna branch, such that front-end mismatches in said transmitter/receiver pair can be compensated, the method comprising:

matching outputs of a power splitter between branches of a transceiver, matching directional couplers, and matching transmit/receive/calibration switches between antenna branches of said transceiver;

switching on a calibration connection of said transmit/receive/calibration switch;

in each of said antenna branches generating a known signal and calculating an averaged frequency response of a cascade of a transmitter and the receiver of a transmitter/receiver pair;

connecting said transmit/receive/calibration switch so as to isolate the receiver from both the transmitter and an antenna;

switching on a calibration noise source;

calculating an averaged frequency response of the receiver branches of said transceiver;

determining values to be pre-compensated from said calculated averaged frequency responses of the cascade of the transmitter and the receiver of said transmitter/receiver pair and of the receiver branches of said transceiver; and

pre-compensating said transmitter/receiver pair using the inverse of said values.

26. The method of Claim 25, wherein said transceiver is a base station transceiver.

27. The method of Claim 25, wherein pre-compensating is performed digitally.

28. A system for transmitting data signals from at least one transmitting terminal with a spatial diversity capability to at least two receiving user terminals, each having a spatial diversity receiving capability, the system comprising:

means for dividing data signals into a plurality of streams of sub-user data sub-signals;

means for determining combined data signals in at least one transmitting terminal, said combined data signals being transformed versions of said streams of

data sub-signals, wherein at least one spatial diversity device of receiving user terminals receives data sub-signals being specific for the corresponding receiving user terminal;

means for inverse subband processing of said combined data signals;

means for transmitting with said at least one spatial diversity device said inverse subband processed combined data signals;

means for receiving on at least one spatial diversity receiving device of at least one of said receiving terminals received data signals, being at least a function of said inverse subband processed combined data signals;

means for determining on at least one of said receiving terminals estimates of said data sub-signals from said received data signals; and

means for collecting said estimates of said data sub-signals into estimates of said data signals.

29. The system of Claim 28, wherein said transmission of said inverse subband processed combined data signals is performed in a substantially simultaneous way.

30. The system of Claim 28, wherein the spectra of said inverse subband processed combined data signals are at least partly overlapping.

31. The system of Claim 28, wherein said means for determining combined data signals in said transmitting terminal comprises means for determining on a subband by subband basis.

32. The system of Claim 28, wherein said means for determining said estimates of said data sub-signals in said receiving terminals comprises means for subband processing.

33. The system of Claim 32, wherein said means for subband processing comprises orthogonal frequency division demultiplexing.

34. The system of Claim 28, wherein said means for determining combined data signals in said transmitting terminal comprises:

means for determining intermediate combined data signals by subband processing said data signals; and

means for determining said combined data signals from said intermediate combined data signals.

35. The system of Claim 34, wherein said means for subband processing comprises orthogonal frequency division demultiplexing.

36. The system of Claim 28, wherein said means for inverse subband processing comprises orthogonal frequency division multiplexing.

37. The system of Claim 28, wherein:

said subbands, being involved in inverse subband processing, are grouped into sets, at least one set comprising at least two subbands;

said means for determining combined data signals in said transmitting terminal comprises:

means for determining relations between said data signals and said combined data signals on a set-by-set basis; and

means for exploiting said relations between said data signals and said combined data signals for determining said data signals.

38. The system of Claim 28, wherein said means for inverse subband processing combined data signals comprises a guard interval.

39. The system of Claim 28, wherein said means for determining combined data signals further comprises means for transmitter filtering, and wherein said means for determining estimates of said sub-signals comprises means for receiver filtering, said means for transmitter filtering and said means for receiver filtering comprise means for determining on a user-per-user basis.

40. The system of Claim 28, wherein the number of said streams of data sub-signals is variable.

41. The system of Claim 28, wherein the number of said streams is selected in order to minimize the error between said estimates of said data sub-signals and said data sub-signals.

42. The system of Claim 28, wherein the number of said streams is selected in order to minimize the system bit error rate.